APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of   Docket No: Q64387

Volkmar HEUER

Appln. No.: 09/863,321   Group Art Unit: 2661

Confirmation No.: 1370   Examiner: Tri H. PHAN

Filed: May 24, 2001

For: A METHOD OF TRANSMITTING SYNCHRONOUS TRANSPORT MODULES VIA A
      SYNCHRONOUS TRANSPORT NETWORK

RESPONSE TO NOTICE OF NON-COMPLIANT BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

     Responsive to the Notice of Non-Compliant Brief mailed February 13, 2007, and in

accord with MPEP 1205.03, appellants submit the attached revised Summary of Claimed Subject

Matter.

                                                     Respectfully submitted,

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V.   SUMMARY OF THE CLAIMED SUBJECT MATTER

A description of the background technology is necessary to properly understand the invention.

SDH (Synchronous Digital Hierarchy) and SONET (Synchronous Optical Network) are two different synchronous digital transport networks, in which useful information is carried in "containers." The containers contain an overhead section known as "path overhead" together with which they are referred to as virtual containers. The virtual containers (referred to as "multiplex units") are themselves multiplexed in a frame referred to as a synchronous transport module, with the virtual containers arbitrarily positioned in the payload section of the transport modules and addressed by a pointer in the overhead section of the transport modules.

Note that the overhead section of the transport module is different from the "path overhead" which is contained in each virtual container. The overhead section of the synchronous transport module contains a pointer to the largest multiplex unit contained in the payload section and also includes one section referred to as RSOH (regenerator section overhead) and one section referred to as MSOH (multiplex section overhead). These contain items of check- and control information which has conventionally been used when a SDH- or SONET-based sub-network interfaces with a transport network of a public operator. This typically involves terminating the overhead of each transport module from a subnetwork and generating new overhead for the transport network, and vice versa when transporting in an opposite direction. Having many different interfaces with different subnetworks can lead to inconsistency as to how the check and control information is used/mapped. Thus, a stated goal of the present invention is

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to provide a multiplexer which allows frames (e.g., STM frames) with a payload section and an overhead section to be transmitted without having to access the overhead sections of the frames.

The invention can be understood with reference to Figs. 1 and 2. Fig. 1 illustrates two synchronous digital sub-networks SN1 and SN2 each carrying frame-structured synchronous multiplex signals; in this example they are synchronous transport modules of the STM-4 type. The method of the present invention is illustrated in Fig. 2 and described from the top of page 8 through the top of page 11 of the specification. Moving from right to left at the bottom of Fig. 2, container C-4 contains payload data, and by the addition of path overhead to this container it becomes a virtual container VC-4, also referred to in the specification and claims as a multiplex unit (see, e.g., lines 6-7 of page 8). By adding a pointer indicating the phase position of the virtual container in a superordinate transport frame, the virtual container VC-4 becomes an Administrative Unit Group (AUG). A plurality N of AUG's (each containing a virtual container VC-4) are combined into a synchronous transport module STM-N, also referred to as a transport frame. As described at the bottom of page 8 of the specification, each transport module is a frame-structured synchronous multiplex signal with payload and overhead sections, and as described at the top of page 9 of the specification, the payload section of the frame STM-N carries N AUG1s (each containing a VC-4 multiplex unit) multiplexed into the payload section of STM-N in accordance with a multiplex hierarchy specified but the ITU-T.

At the interface between the VPN and WAN as shown in Fig. 2, new multiplex units of the VC-4 type are formed and are concatenated to form concatenated virtual containers indicated by the boxes labeled 2xVC-4v, 5xVC-4v and 17xVC-4v. The virtual containers are converted to

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AUG's by the addition of a pointer as described above, and N AUG's (each containing a

concatenation of newly-formed multiplex units VC-4) are multiplexed into the payload section of

a newly-formed transport frame STM-N, at the upper left corner of Fig. 2, which is then

transmitted on the transport network WAN.

The end result is to have transport modules in the transport network WAN which have a

payload section and an overhead section. The overhead section will be available exclusively for

control and management functions of the public transport network. The payload section will

carry a concatenation of newly-formed multiplex units, and the multiplex units carrying as

payload the STM frames (e.g., the STM-4 transport modules from sub-network SN1) to be

transmitted, including the overhead sections of those frames. Note again that that the overhead

section of the frames is not "path overhead." Path overhead is what is included in each of the

original virtual containers VC-4 designated by the second box from the right in each of the two

lowermost rows in Fig. 2. When these containers are multiplexed into a synchronous transport

module, there is another overhead added to this module which is not path overhead but instead is

management overhead and includes things such as the RSOH and MSOH discussed above. This

overhead as conventionally been deconstructed and terminated at the interface between VPN and

WAN when transmitting out onto the WAN. According to the invention, this STM overhead

will instead be included as payload in newly-formed transport modules on the WAN.

Claim 1 recites:

> 1. A method of transmitting, via a synchronous digital transport network, a frame-structured synchronous multiplex signal, composed of frames having a payload section and an overhead section, wherein the payload section comprises multiplex units that are multiplexed according to a multiplex hierarchy, wherein the method comprises transmitting a frame of the frame-structured synchronous multiplex signal to be transmitted, including its unchanged overhead section, as payload in a concatenation of newly formed multiplex units.

Thus, in Fig. 2, the frame structured synchronous multiplex signal is STM-N indicated at the left side of Fig. 2 in the VPN section. The frame has a payload section and an overhead section as described at the bottom of page 8 of the specification, with the payload section including N multiplex units as described at the top of page 9 of the specification. The entire frame STM-N at the left end of the VPN region in Fig. 2, including both its payload and overhead sections, is placed as payload in a concatenation of newly-formed multiple units (2xVC-4v, 5xVC-4v or 17xVC-4v in the lower right of the WAN region in Fig. 2), and in this manner is transmitted over the WAN.

Claim 9 reads:

> 9. A multiplexer for a synchronous digital transport network comprising:
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> at least one tributary input for receiving a first frame-structured synchronous multiplex signal comprising first frames each having a payload section and an overhead section, wherein the payload section comprises multiplex units that are multiplexed according to a multiplex hierarchy,
>
> a multiplex device, connected to the tributary input, for creating new multiplex units for concatenating the newly formed multiplex units to form a concatenation, and for packing a received frame, including the unchanged overhead sections thereof, as payload in the concatenation of the newly formed multiplex units, and
>
> at least one output for creating and transmitting a second, frame-structured synchronous multiplex signal comprising second frames in whose payload sections the concatenated, newly formed multiplex units are inserted.

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The first frames are the STM-N signals on the left side of Fig. 2 in the VPN region, the newly-formed multiplex units are the signals 2xVC-4v, 5xVC-4v and 17xVC-4v in the WAN region of Fig. 2, and the second frames are the STM-N signals at the left side of Fig. 2 in the WAN region. The multiplexer of claim 9 is illustrated in Fig. 8. The at least one tributary is represented at 81 in Fig. 8, as described at lines 29-30 of page 17. The multiplex device of claim 9 is also at the input 81 in Fig. 8, with lines 30-35 of page 17 describing the formation at the input 81 of five virtual containers VC-4 for each STM-4 frame received at the input 81, the concatenation of these new containers together, and the packing of the received STM-4 frame as payload into the concatenated containers. The claimed at least one output corresponds to the STM-16 outputs at the lower right of Fig. 8, with lines 1-2 of page 18 describing that the concatenated containers are supplied by the VC-4 matrix to one of these outputs where the concatenated newly-formed containers (into which the received STM-4 frame has been packed as payload) can be interleaved into the STM-16 frame.